

TRANSITWAY CORRIDOR FEASIBILITY STUDY



DASH
703-370-DASH
ROUTE DESTINATION
2 LINCOLNIA
5 VAN DORN ST-34
7 LANDMARK MALL

DASH
703-370-DASH
NO PARKING
LOADING ZONE
8AM-6PM

NOR



Alexandria City Council Public Hearing
September 17, 2011 Meeting

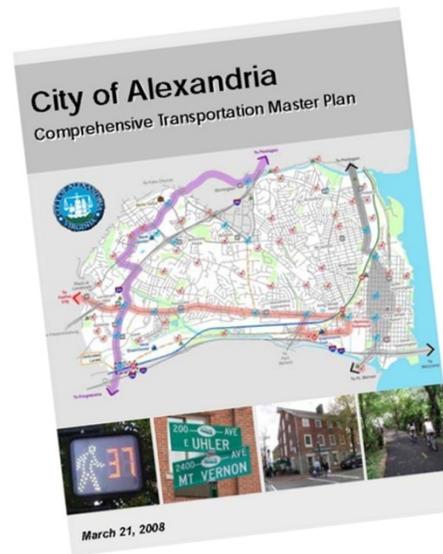
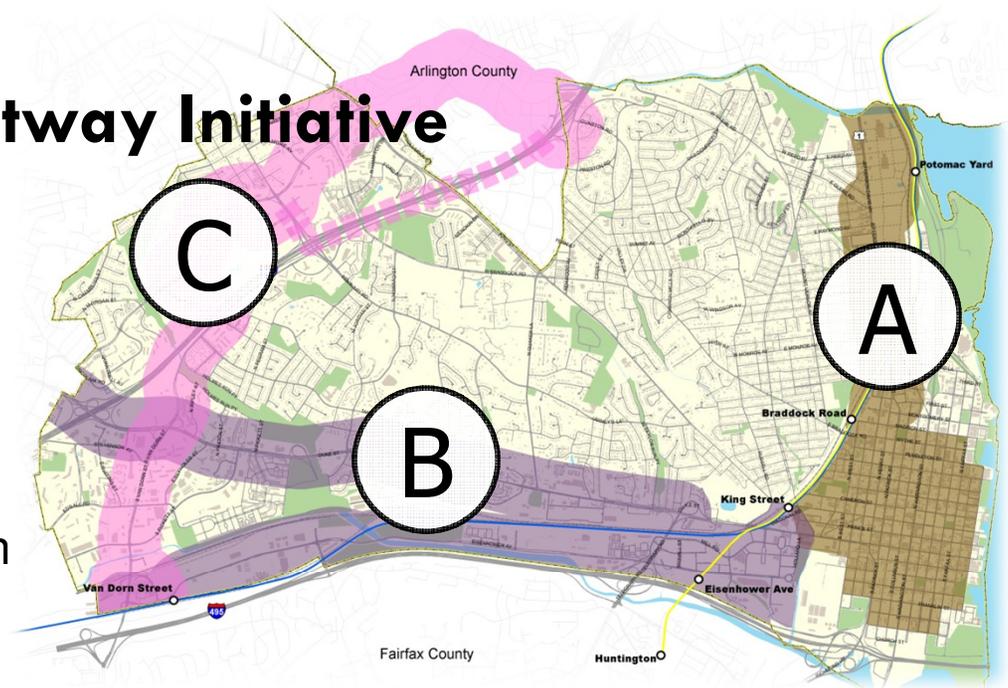
Corridor C Transitway Preliminary Recommendation



Kimley-Horn
and Associates, Inc.

City Transitway Initiative

- Corridors identified by Transportation Master Plan
 - Corridor A: North-South Corridor
 - Corridor B: Duke/Eisenhower
 - Corridor C: Beauregard/Van Dorn



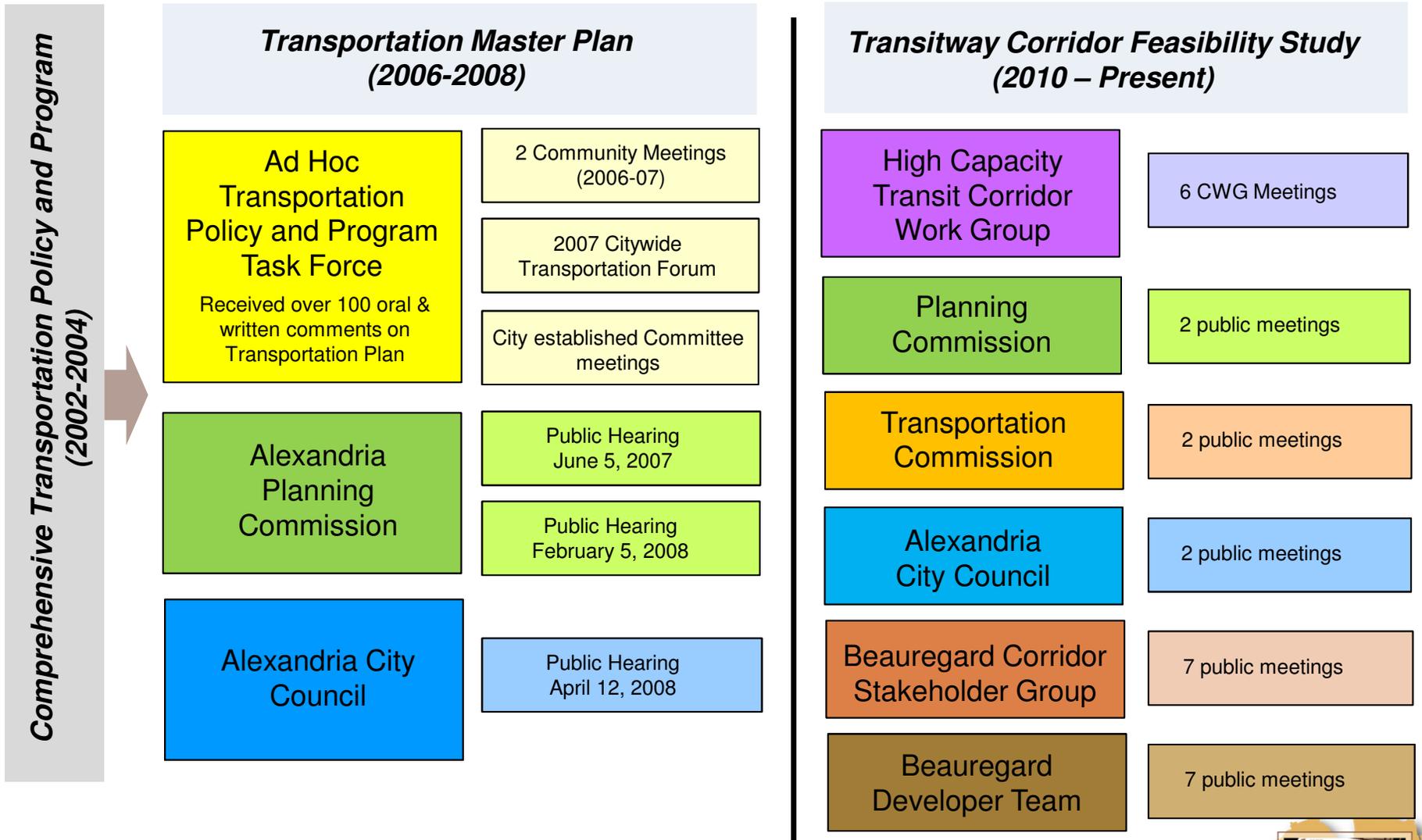
High Capacity Transit Corridor Work Group

To provide citizen inputs to such issues as include **route alignments, cross-sections, methods of operation, types of vehicles** which should be used in these corridors at specific times, **land use considerations, ridership, and financial implications.**

- City Council – 2 representatives
- Planning Commission
- Transportation Commission
- Budget & Fiscal Affairs Advisory Committee
- Chamber of Commerce
- Federation of Civic Associations – 2 representatives
- Resident with Transit Planning Expertise



Corridor C Transitway Public Outreach History



Corridor C Transitway Public Outreach History

Corridor Work Group

- October 21, 2010: Overview of the Project
- November 18, 2010: Corridor C Concepts
- January 20, 2011: Meeting to Discuss Overall Assessment of Corridor C
- March 17, 2011: Secondary Screening of Corridor C Alternatives
- May 5, 2011: Work Session on Corridor C
- May 19, 2011: Selection of Recommended Alternative for Corridor

Commissions and Council

- February 1, 2011: Planning Commission - Transitway Overview
- April 6, 2011: Transportation Commission – Refined Alternatives
- September 7, 2011: Transportation Commission – Corridor C Recommendation
- September 8, 2011: Planning Commission – Corridor C Recommendation
- September 13, 2011: Council – Corridor C Recommendation
- September 17, 2011: Council Hearing – Corridor C Recommendation

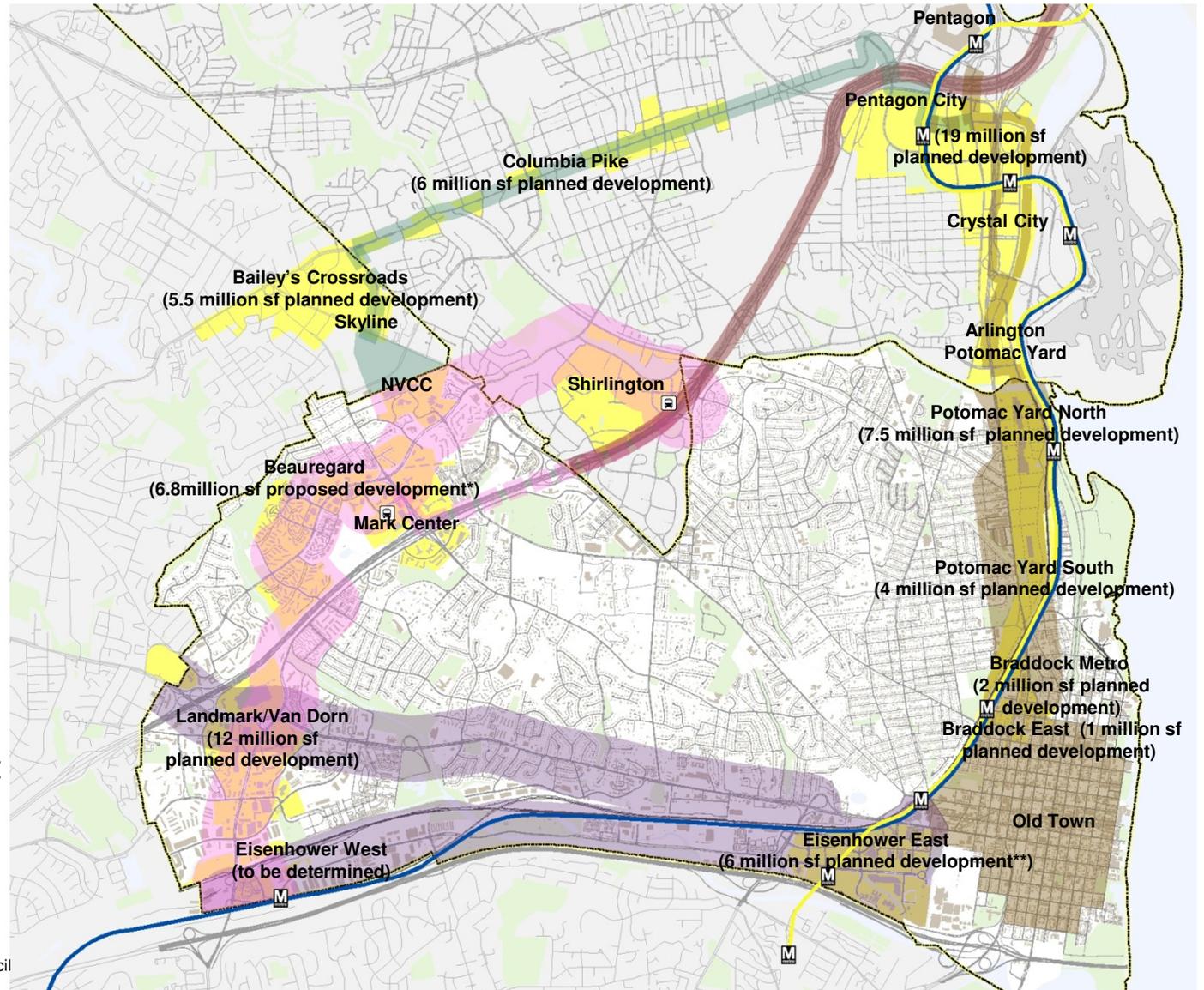
← **Periodic Transportation Commission Staff Updates** →

← **Beauregard Corridor Stakeholder Group Meetings** →



Land Use and Transportation Connectivity

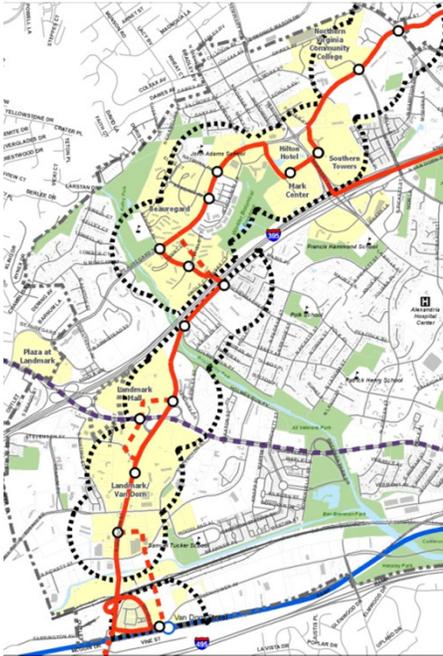
- Beaugard corridor plan
- Braddock Metro & Braddock East plans
- Columbia Pike Initiative
- Crystal City plan
- Eisenhower East plan
- Eisenhower West area development
- Landmark/Van Dorn corridor plan
- Mark Center plan
- Metrorail Blue & Yellow lines
- NVCC Community College master plan
- Old Town
- Pentagon
- Pentagon City development
- Potomac Yard plans (Arlington and Alexandria)
- Shirlington



Regional development values approximate
 *Value approximate based on current developer plans for Beaugard Area that have not been approved by City Council
 **Value does not include Carlyle

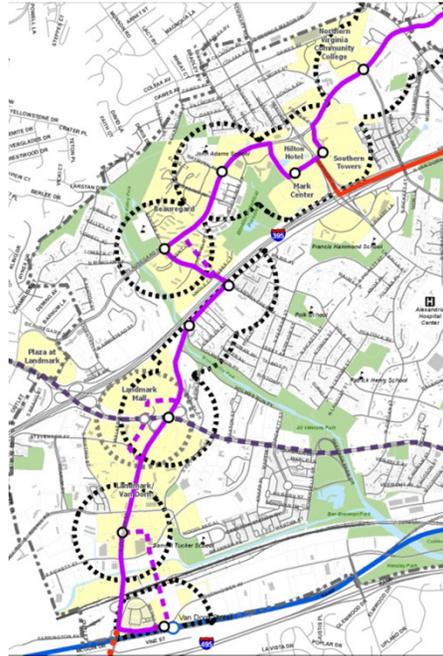
Preliminary Alternatives Selected for Further Evaluation

Alternative B



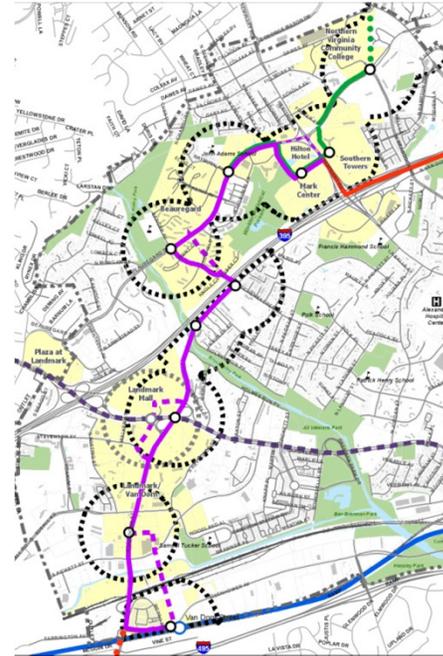
- Possible preliminary phase of any other alternative
- Baseline for evaluation

Alternative D



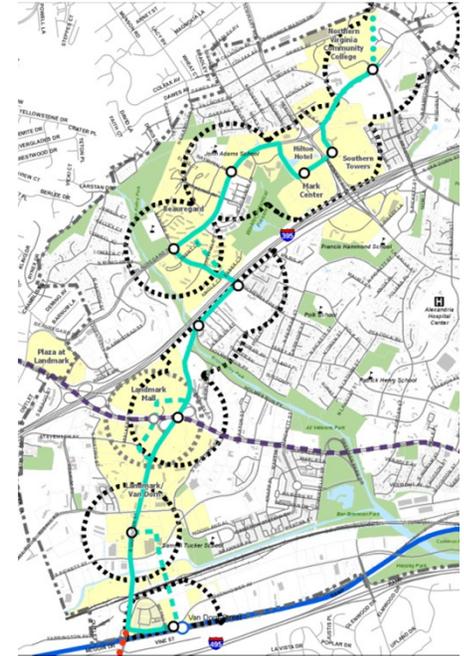
- Support from CWG
- BRT
- Shirlington connection
- Moderate capital cost

Alternative E



- Support from CWG
- BRT and streetcar
- Single seat ride between Columbia Pike and potential Beauregard Town Center
- Moderate-high capital cost

Alternative G



- Public support
- Streetcar option
- Compatibility with Columbia Pike
- High capital cost

Legend			
	Rapid Bus		Phased Route
	Streetcar - Mixed Flow		Optional Route or Columbia Pike Connection
	BRT (Bus Rapid Transit)		Transitway Station
	Streetcar (dedicated lanes)		Quarter-mile station area



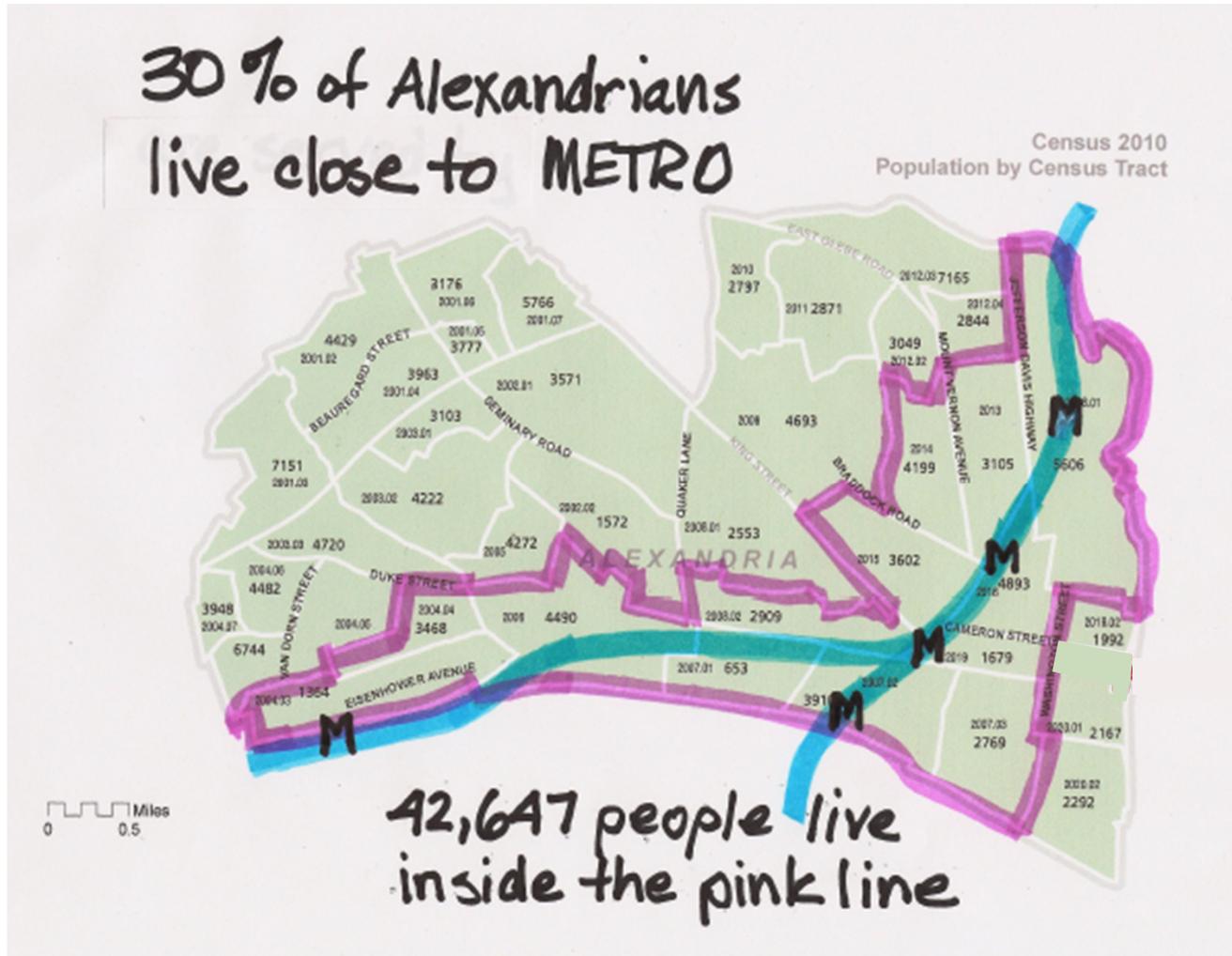
Secondary Evaluation Criteria – Effectiveness

Criteria Sub-Group	Evaluation Criteria	Measurement Method
Coverage	Service to Population, Employment, and Other Destinations	Tabulate population, employment, key destinations, and similar, served by option
	Transit Connectivity	Access to other transit services (existing and planned)
Operations	Running-way Configuration(s)	Quantify amount of runningway that is dedicated and amount that is mixed flow
	Corridor Length	Measured length of the corridor (mi or feet)
	Capacity	Potential corridor capacity (hourly) based on mode technology, headways, and other conditions
	Interoperability	Identification of whether the chosen runningway configuration and transit mode technology are compatible with regionally planned systems
	Avoidance of Congestion	Number and locations of LOS E/F intersections avoided
	Transit Travel Time	Transit travel time
	Intersection Priority	Percent of intersections where TSP is needed and can be implemented successfully - notation of where it cannot be implemented successfully
	Ridership	Forecast number of riders
Alignment	Geometrics	Geometric quality of alignment
	Runningway Status	Percent of corridor to be located on new or realigned roadway
Phasing	Phasing	Identification of ability to phase operations and implementation

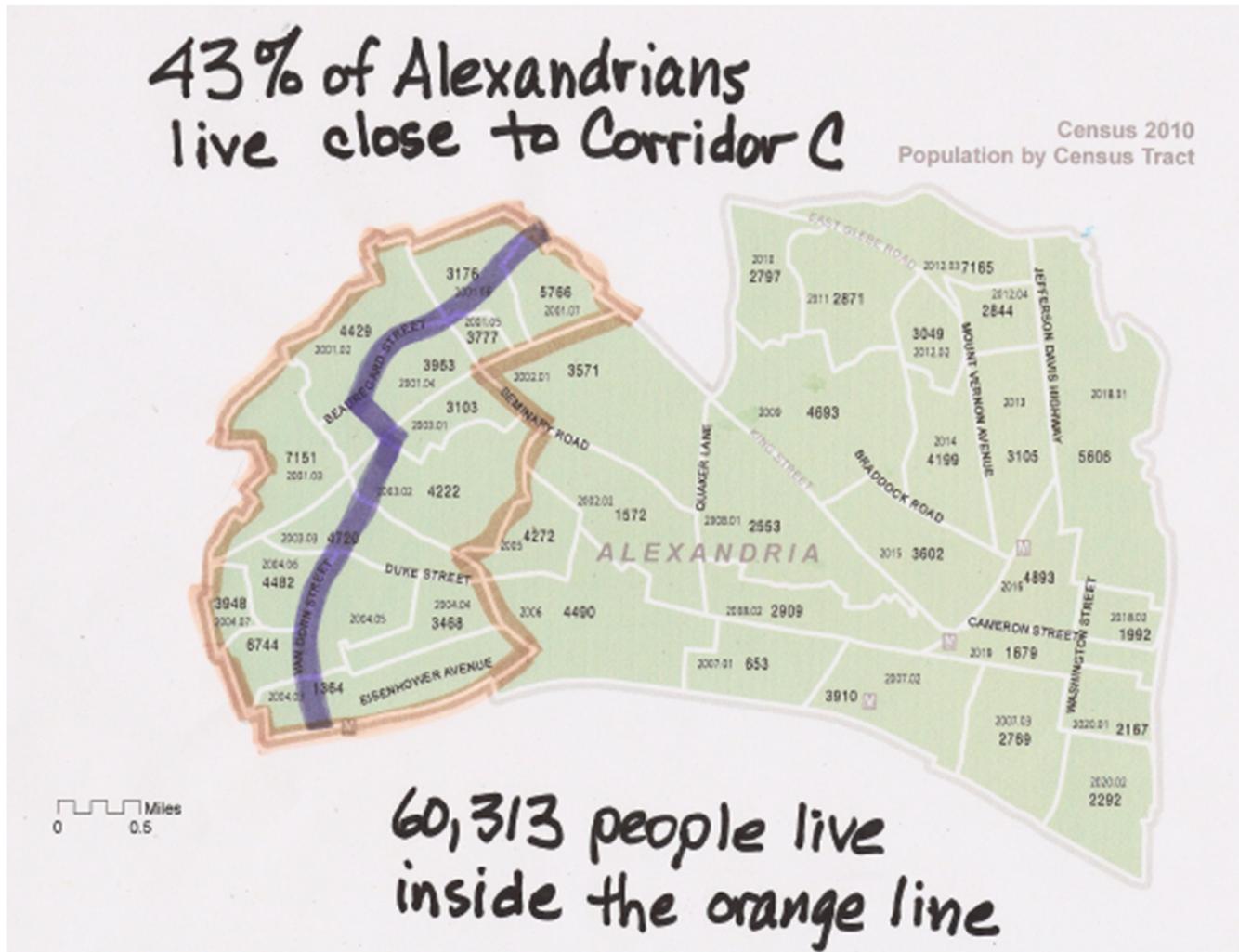
Secondary Evaluation Criteria - Impacts

Criteria Sub-Group	Evaluation Criteria	Measurement Method
Economic	Development Incentive	Perceived value of transit mode technologies with regard to development potential
Natural Environmental	Natural Environment	Summary of key environmental conditions affected (wetlands, floodplains, T&E, streams, and similar)
	Parks and Open Space	Summary of parks and/or open spaces affected
Neighborhood and Community	Property	Number, use type, and quantity of properties impacted with anticipated level of impact (ROW only, partial take, total take)
	Streetscapes	Impact to existing streetscapes
	Community Resources	Identify number and location of historical, cultural, community, archaeological resources affected
	Demographics	Identification of impacts to special populations
	Noise and Vibration	Summarize relative noise and vibration impacts of different mode types and corridor configurations
Transportation	Traffic Flow Impact	Effect of transit implementation on vehicular capacity of corridor
	Traffic Signals	Number of existing signalized intersections affected by transit, identification of need for new signal phases, and number/location of new traffic signals needed to accommodate transit
	Multimodal Accommodation	Impacts to, and ability to accommodate bicycles and pedestrians
	Parking	Impacts to parking

Corridor C – Existing High Capacity Transit Service



Corridor C – Existing High Capacity Transit Service



Planning-Level Ridership Forecasts

	Alternative			
	B <i>(baseline)</i>	D	E	G
Transit Mode:	Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)
Northern Connection:	Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike
Year 2035 Daily Weekday Ridership	-	12,500 to 17,500 riders/day	13,500 to 19,000 riders/day	15,000 to 20,000 riders/day

- Approximately 20% difference between lowest and highest daily ridership

Secondary Evaluation - Effectiveness

Evaluation Criteria		Alternative				
		B <i>(baseline)</i>	D	E	G	
Transit Mode:		Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)	
Northern Connection:		Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike	
Coverage	Service to Regional Destinations					
	Service to Population, Employment, & Retail in the Corridor					
	Transit Connectivity					
Operations	Running-way Configuration(s)					
	Corridor Length					
	Capacity					
	Interoperability					
	Avoidance of Congestion					
	Transit Travel Times	In Corridor				
		Between Termini				
	Ridership					
	Intersection Priority					
Align-ment	Alignment Quality					
	Runningway Status					
Phasing		N/A				

Rating:		Best		Fair		Poor
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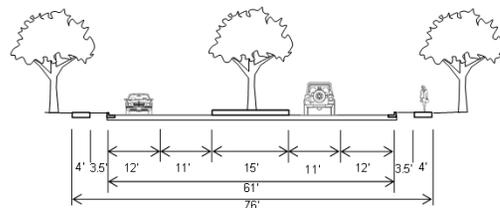
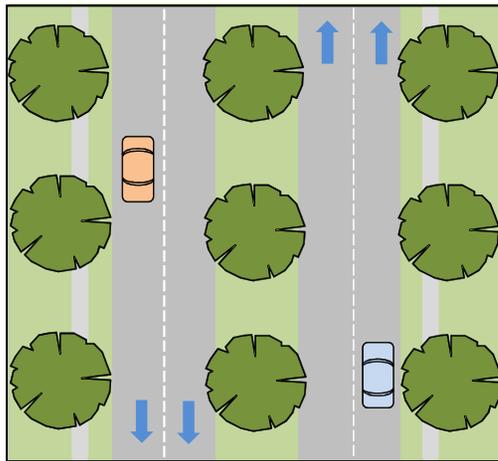
Secondary Evaluation - Impacts

Evaluation Criteria		Alternative			
		B <i>(baseline)</i>	D	E	G
Transit Mode:		Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)
Northern Connection:		Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike
Economic	Development Incentive				
	Natural Environment				
Natural Environment	Parks and Open Space				
	Property				
Neighborhood and Community	Streetscapes				
	Community Resources				
	Demographics				
	Noise and Vibration				
	Traffic Flow Impact				
Transportation	Traffic Signals				
	Multimodal Accommodation				
	Parking				

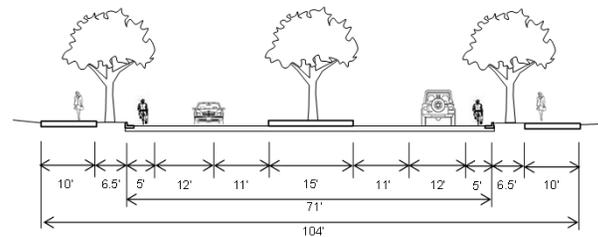
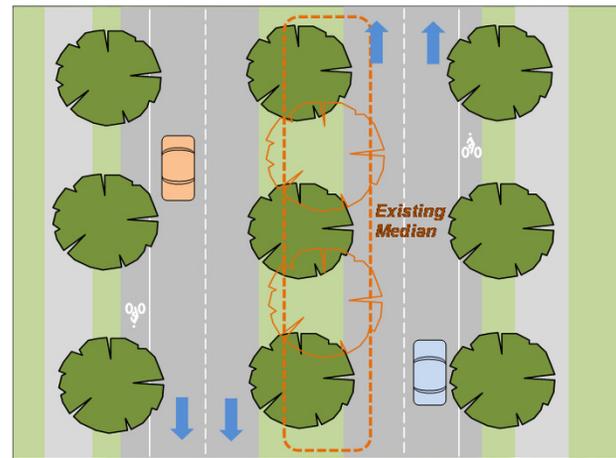
Rating:		Best		Fair		Poor
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Corridor C Transitway – Streetscape Impacts

Complete Streets



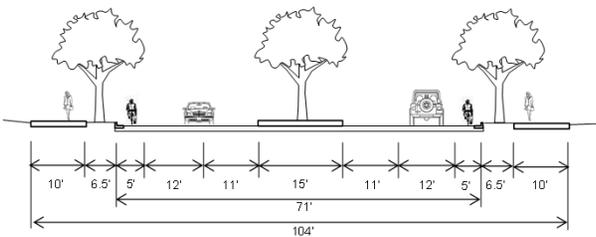
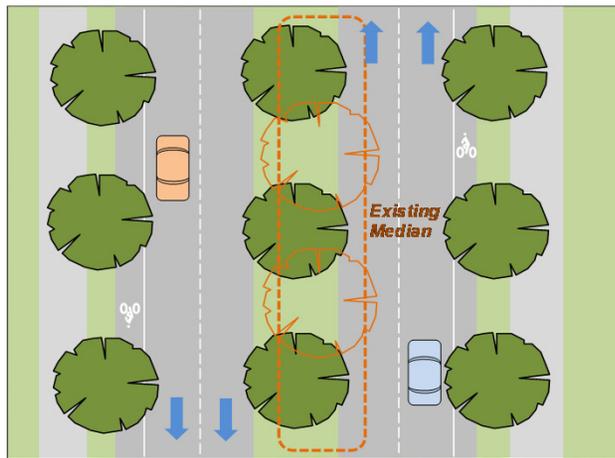
Existing (Suburban)



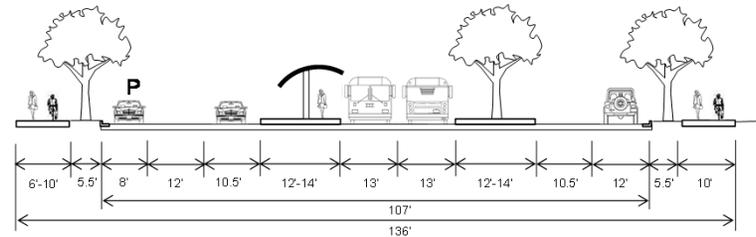
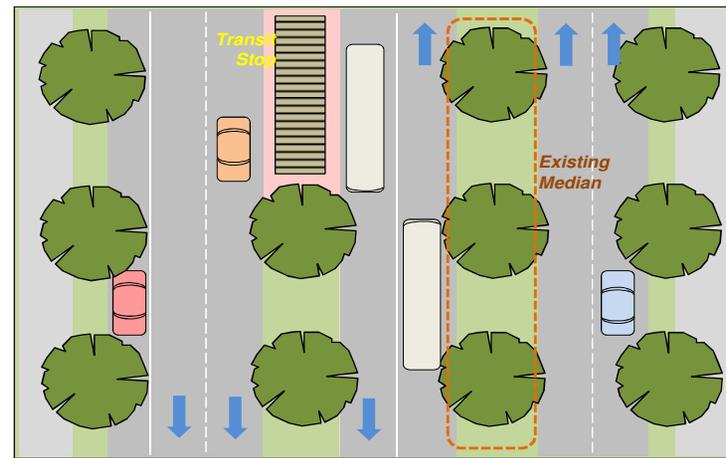
Complete Street

Corridor C Transitway – Streetscape Impacts

Transitway



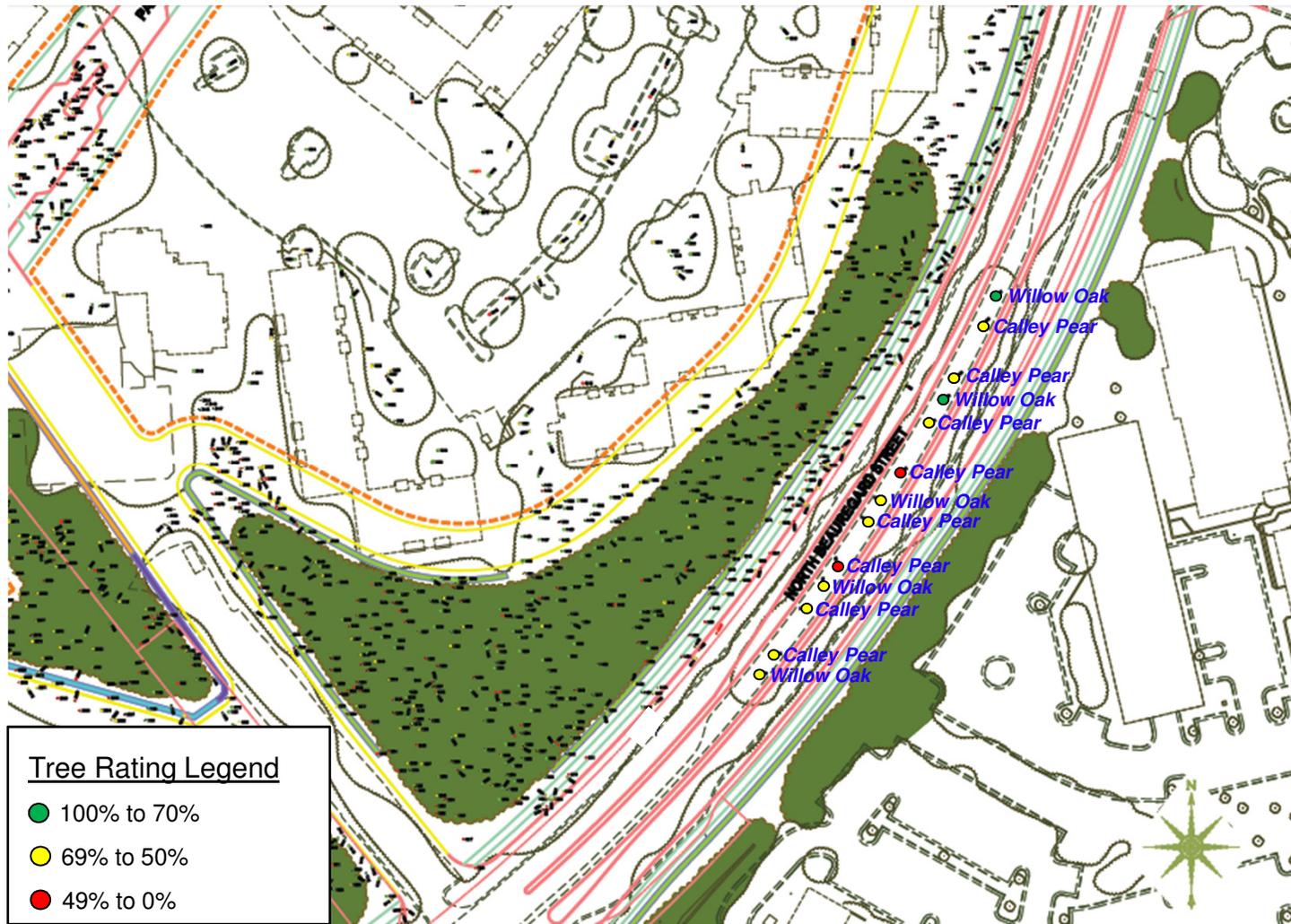
Complete Street



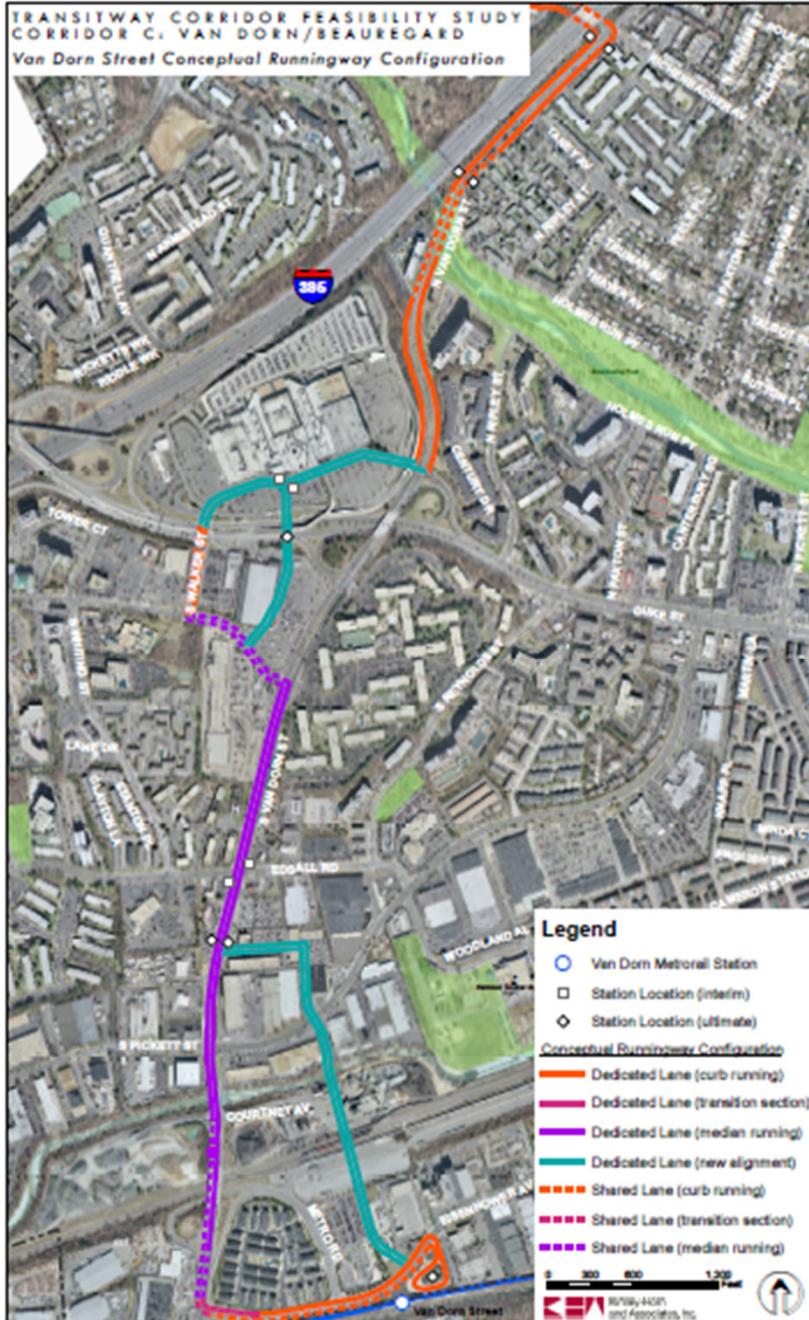
Transitway



Corridor C Transitway – Streetscape Impacts Tree Survey (Reading to Roanoke)



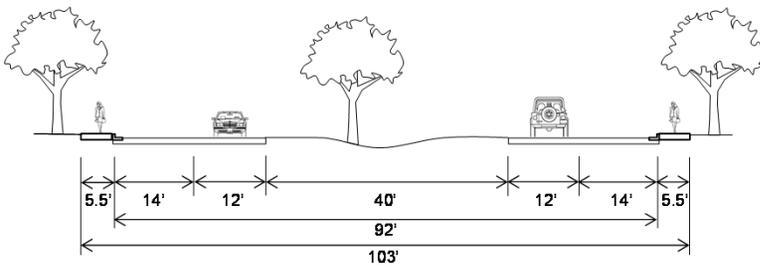
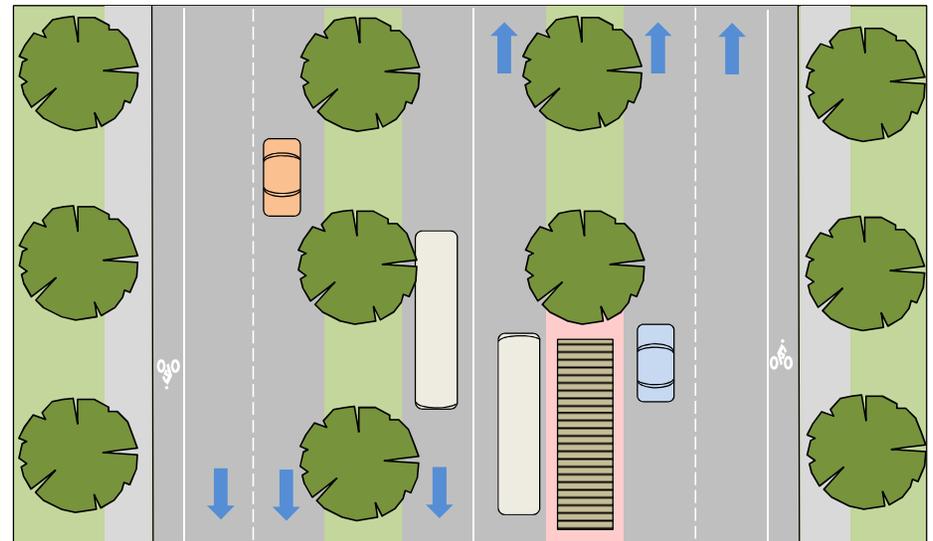
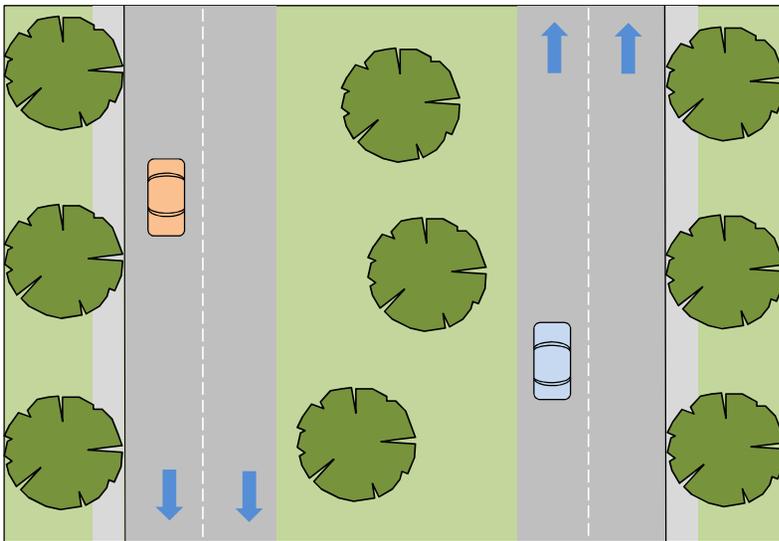
TRANSITWAY CORRIDOR FEASIBILITY STUDY



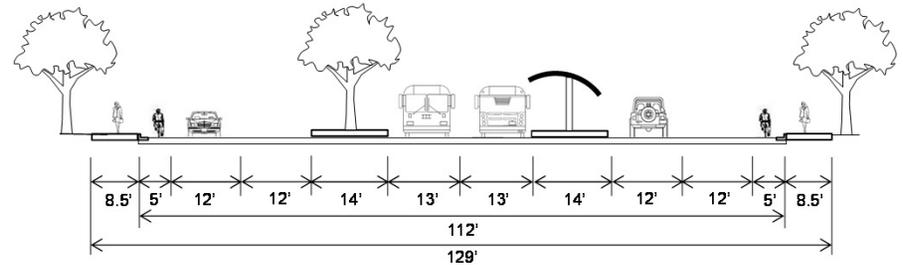
Corridor C Transitway – Van Dorn Street



Corridor C Transitway – Van Dorn Street



Existing



Transitway / Complete Streets



Traffic Analysis (Year 2035)

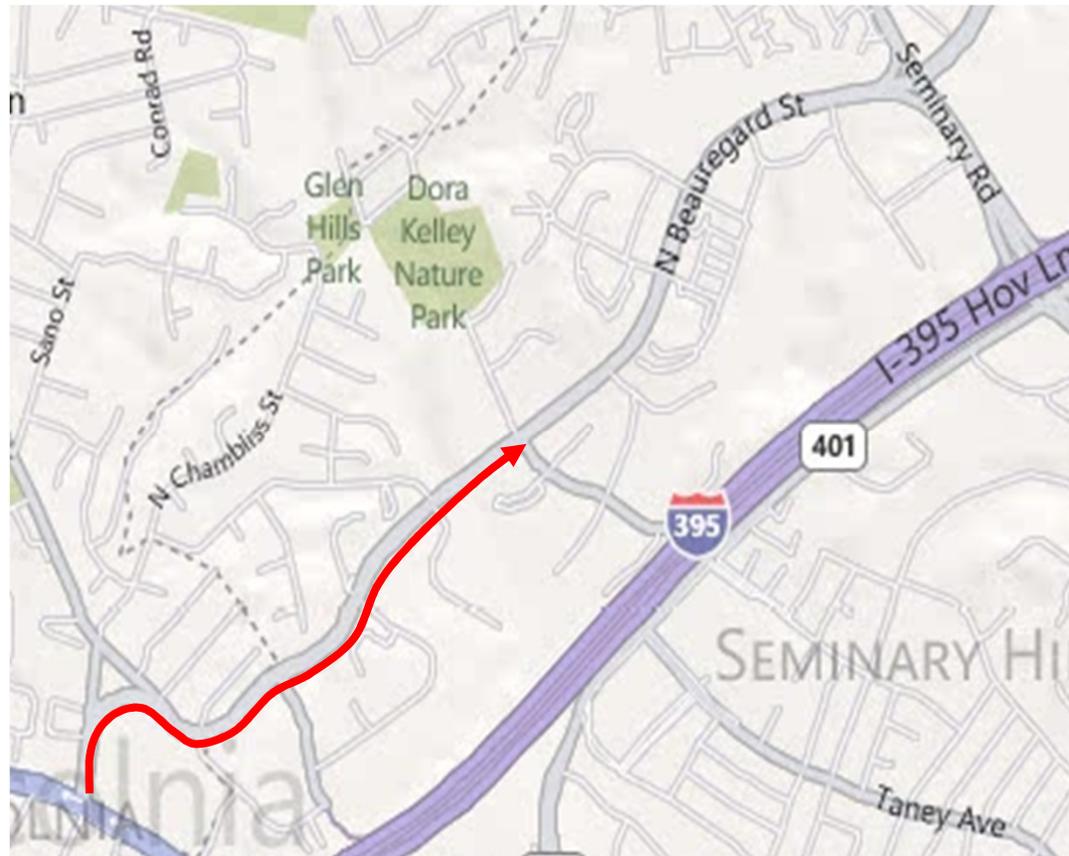
Convert existing lane (each direction) on Beauregard to dedicated transit lane

- One General Purpose (GP) lane each direction on Beauregard between Sanger and Mark Center Drive
- Two GP lanes each direction on Beauregard between Mark Center Dr. and Beauregard
- Reduction of daily volume along Beauregard of up to 14,000
- Increase of 8,000 vehicles per day on Van Dorn and parallel road (combined)
- **Result in excessive NB queue lengths (maximum queues) during AM peak (impacting upstream intersections) and delays along Beauregard**
- **Level of Service (LOS) F on Beauregard**



Traffic Queues

Convert existing lane (each direction) on Beauregard to dedicated transit lane (2035 AM)



Traffic Analysis (Year 2035)

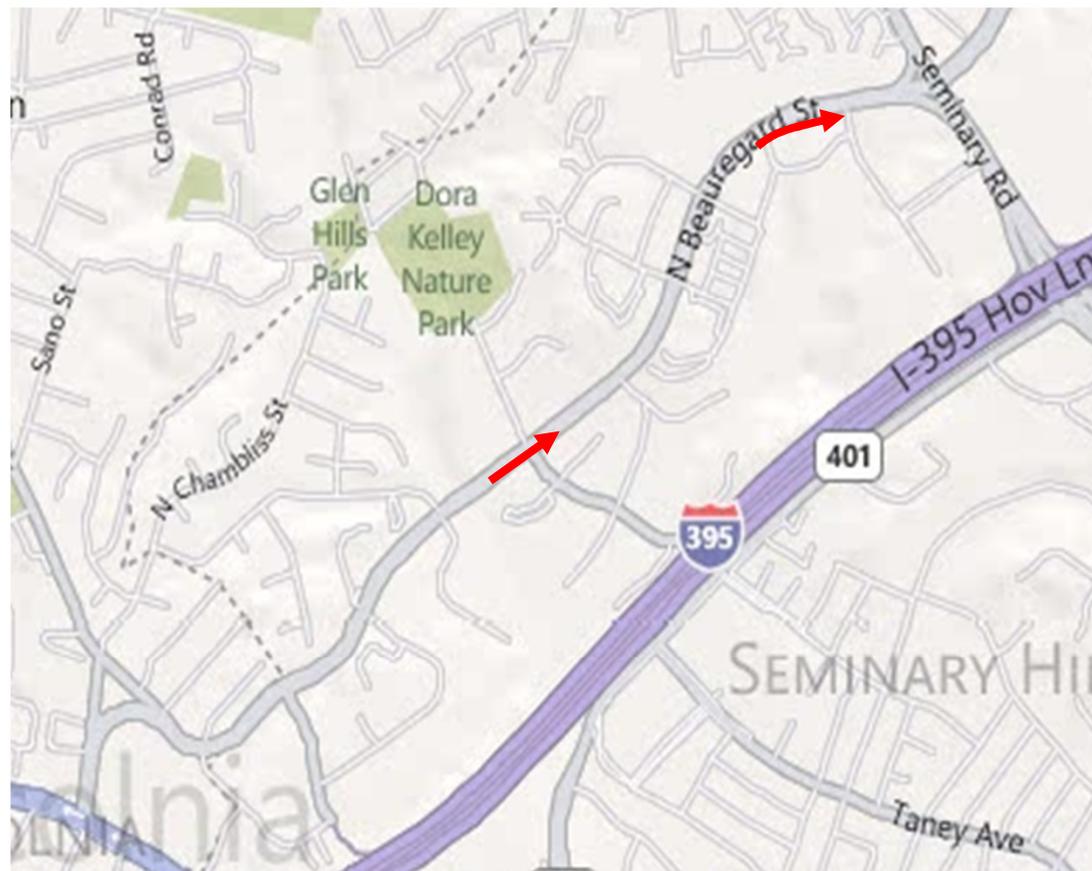
Maintain Two GP lanes each direction on Beauregard and Dedicated Transit Lanes

- Assumes parallel road only between Sanger and Mark Center Drive
- Two GP lanes each direction on Beauregard between Sanger and Beauregard
- Assumes construction of ellipse at intersection of Beauregard at Seminary
- **Some minor queues on NB Beauregard during AM Peak (Maximum queues)**
- **Level of Service operates at LOS E or better along Beauregard between Sanger and Seminary**
- Only one intersection operates at LOS E (Seminary / Beauregard, 2035 PM Peak)



Traffic Queues (Year 2035 AM)

Two GP lanes each direction on Beauregard and Dedicated Transit Lanes



Traffic Queues

Impact of Short / Mid Term BRAC Improvements (2015 AM)



Planning-Level Cost Estimates

	Alternative			
	B <i>(baseline)</i>	D	E	G
Transit Mode:	Rapid Bus (mixed)	BRT (mixed & dedicated)	Streetcar (mixed) & BRT (mixed & dedicated)	Streetcar (dedicated)
Northern Connection:	Shirlington & Pentagon	Shirlington & Pentagon	Columbia Pike & Pentagon	Columbia Pike
Capital Cost Estimate¹ <small>(exclusive of vehicles, based on modal cost per-mile within the City and maintenance facility cost estimation)</small>	\$15 M	\$48 M	\$67 M	\$185 M
25-year Fleet Cost Estimate²	\$24 M	\$20 M	\$34 M	\$29 M
Right-of-Way Cost Estimate^{1, 3}	\$0 M	\$33 M	\$43 M	\$50 M
25-year Operating Cost	\$67 M	\$60 M	\$73 M	\$59 M
Planning-Level Cost Estimate⁴	\$106 M	\$161 M	\$ 217 M	\$323 M

Notes

1. Costs assume that Arlington's Columbia Pike streetcar terminates at NVCC at a maintenance facility. Costs for Alternatives E and G would be higher if the Columbia Pike maintenance facility is located in Long Bridge Park due to the location of the terminus of Columbia Pike.
2. Streetcar fleet costs are for the Alexandria portion of the streetcar only and are assumed to supplement Arlington's Columbia Pike fleet.
3. Right of way costs do not include property along Eisenhower Avenue, within Northern Virginia Community College, or in locations where development contribution is expected.
4. Planning level cost estimates are shown in year 2010 dollars and do not include additional contingency or escalation to a future year mid-point of construction. Totals listed do not include costs for major utility relocations/new service, or the capital costs for roadway/streetscape improvements that may be implemented concurrently, but are not required for the transit project. Alignments designated as "optional" or "phased" are not included in the cost.

Summary of Public Comments

Phasing

- Need for a multi-phased approach to implementing the transitway
- Start out with something smaller, not high capacity transit
- Need to understand where people are and where they need to go

Connectivity

- Provide connectivity to local activity centers in Alexandria, Arlington, and Fairfax
- Serve local residents first, then regional connections
- Important to provide pedestrian and bicycle connectivity

Mode and Operation

- Need something that is permanent, like streetcars, that will attract visitors and development
- Need dedicated lanes for system effectiveness
- Use existing travel lanes to accommodate transit
- Make sure there is a seamless connection between corridors and other transit
- Needs to be a high quality operation
- Must operate at high frequencies throughout the day



Summary of Public Comments

Impacts

- Don't reduce or impact current local transit services after high capacity transit is implemented
- Need to understand the impacts of the BRAC facility, especially to the roadway system.
- Do not worsen the traffic impacts
- Sanger Avenue cannot handle a transitway – it's already constrained
- There are potential environmental impacts to Holmes Run
- Concerned about the impacts at Sanger and Van Dorn intersection – it's already congested
- Minimize the impacts to the West End – it's already being impacted by BRAC
- A streetcar system is too expensive to
- BCSG – Provide adequate facilities for emergency response and traffic operations



CWG Recommendation – May 19, 2011

The following motion was passed by the High Capacity Transit Corridor Work Group at its May 19, 2011 meeting, regarding transit in Corridor C:

*"Alternative D is the preferred alternative for phased implementation of transit in dedicated lanes in Corridor C until such time as Alternative G becomes feasible and can be implemented. This course of action is consistent with the Council's recent decision to provide dedicated lane transit along the segment of Corridor A that is north of Braddock Road. Evaluation and analysis will continue of Alternative D in preparation for future implementation of Alternative G. **Construction of transit in Corridor C shall be the first priority of Alexandria's transportation projects.** Each subsequent corridor shall be evaluated separately regarding the need to acquire additional right-of-way for dedicated lanes as discussed in the Transportation Master Plan."*

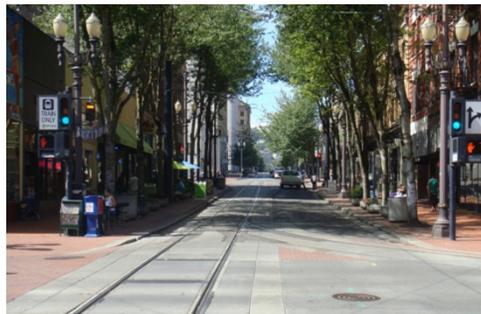


Corridor C Transitway – Recommended Operation

BRT Characteristics



Streetcar Characteristics



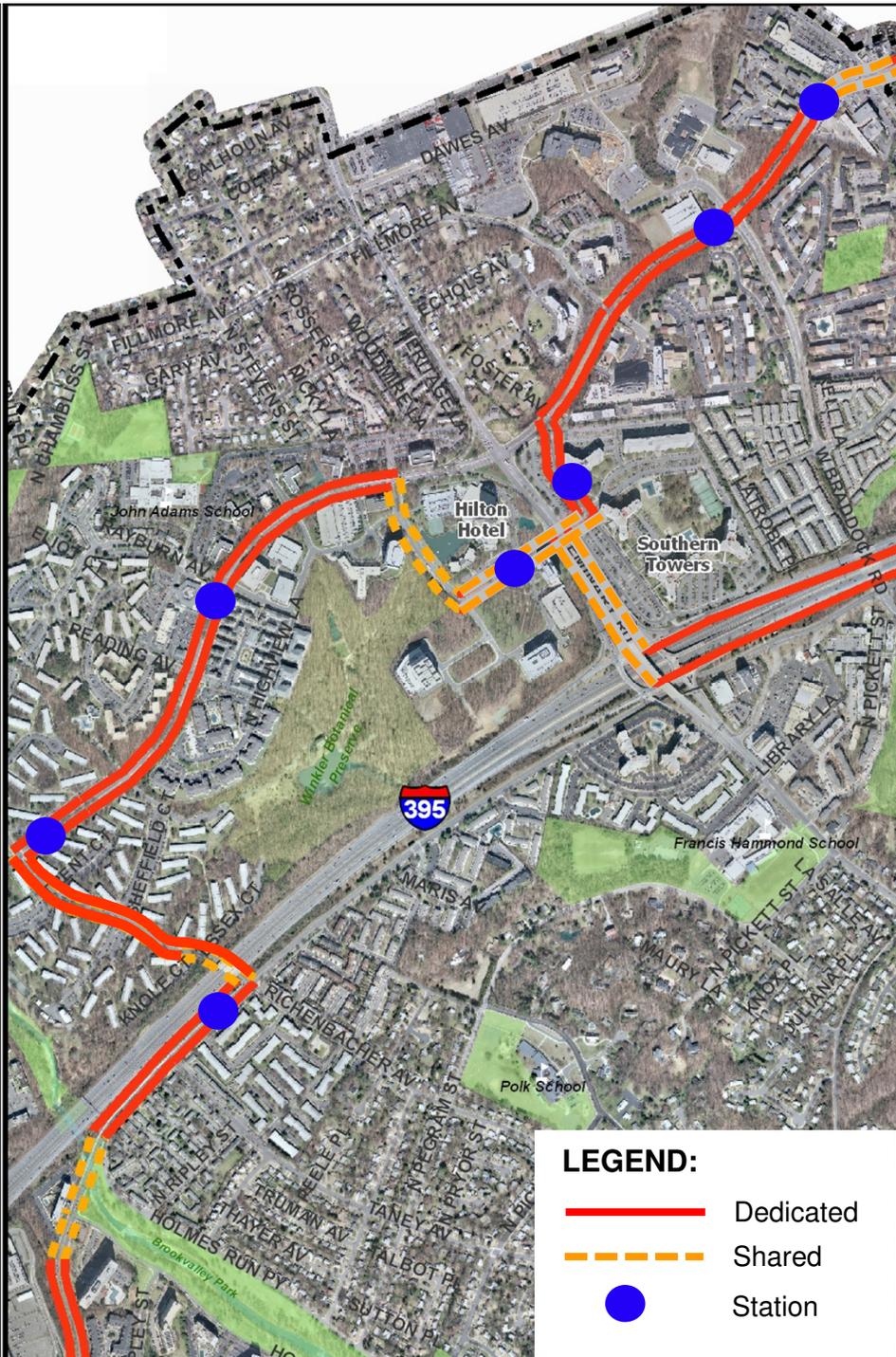
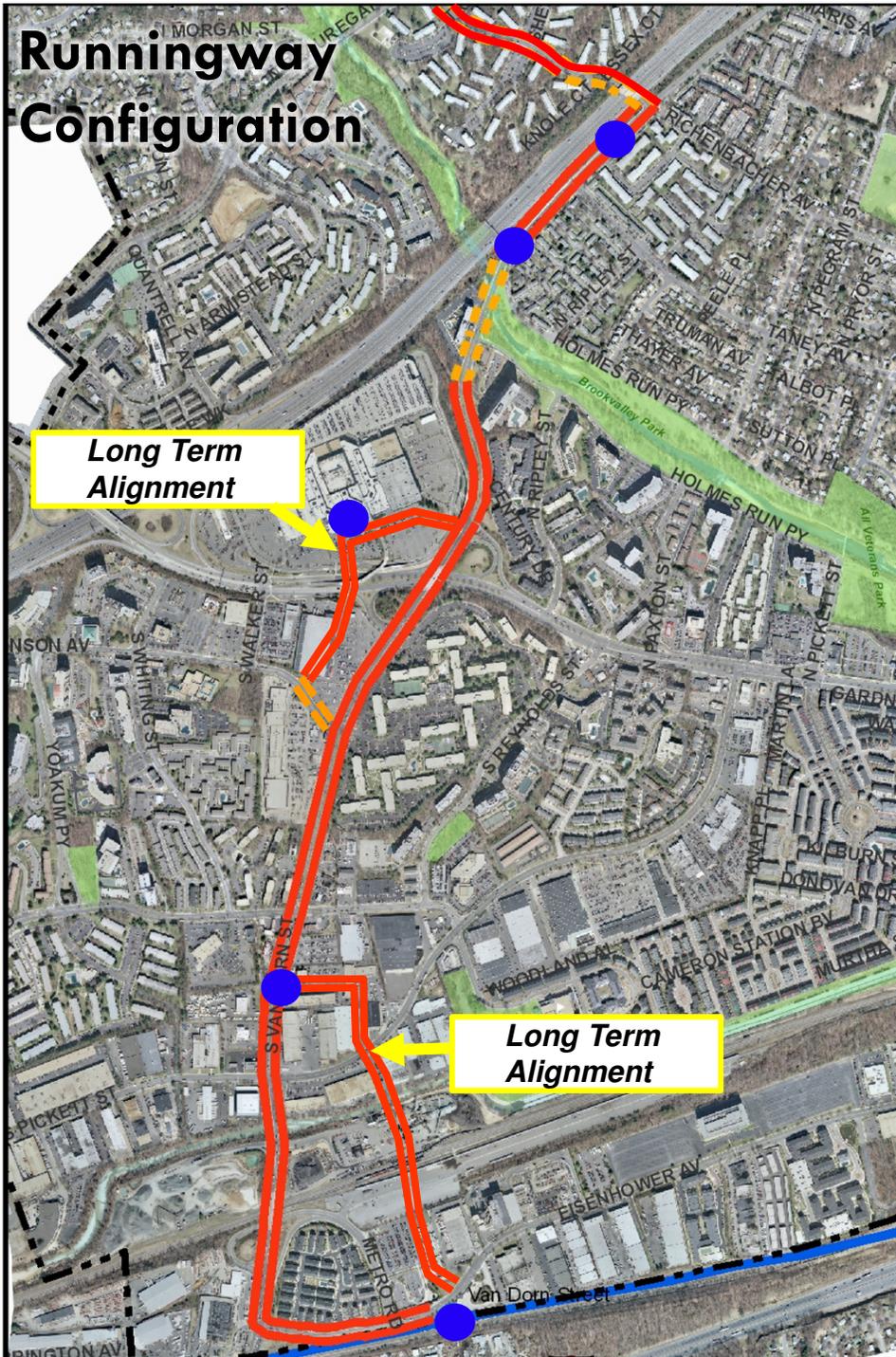
Station Characteristics

TRIMET		October 11, 2009 4:22 pm	
9	Powell to 98th Ave	5 min	
9	Powell to Gresham TC	23 min	
17	Holgate to 136th Ave	5 min	46 min
19	Woodstock to Mt Scott & 112th via 28th Ave	4:45 pm	
44	Capitol Hwy to PCC Sylvania	8 min	43 min

Let us know how we're doing. Email comments@trimet.org or call 503-238-RIDE. Get service updates!



Runningway Configuration



LEGEND:

-  Dedicated
-  Shared
-  Station

Transportation Commission – September 7, 2011

The following motion was passed by the Transportation Commission on September 7, 2011, regarding transit in Corridor C:

The Transportation Commission recommends that the City Council adopt the recommendation of the CWG for Corridor C, with two caveats:

- *The alignment be optimized to better serve the Northern Virginia Community College (NVCC), and;*
- *Recommend that the Transportation Commission be tasked to identify decision criteria, evaluate and monitor the transition from Alternative D (Bus Rapid Transit in dedicated lanes) to Alternative G (Streetcar in dedicated lanes), and periodically report the progress to the City Council.*



Planning Commission – September 8, 2011

The following motion was passed by the Planning Commission on September 8, 2011, regarding transit in Corridor C:

The Planning Commission reaffirmed support for transit in Corridor C on an expedited basis and believes that there should be bus rapid transit running in dedicated lanes. The Commission had insufficient information on the non-transportation planning elements to form any further judgment.



Next Steps for Corridor C

- City Council Public Hearing and Recommendation – September 17
- **Alternatives Analysis / Environmental Analysis** – 2012-2013
- Preliminary Design – 2014
- Briefings to **Transportation / Planning Commissions / Council** regarding design elements
- Final Design and Right-of-way Acquisition – 2015
- Construction – 2016 - 2017



THANK YOU!

<http://alexandriava.gov/HighCapacityTransit>

DISCUSSION & COMMENTS

